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ABSTRACT

This paper applies a developmental perspective to locus of control studies. Contingency awareness established during infancy and early childhood is viewed as the basis for the development of locus of control expectancies. Expectancies of contingent reinforcement involve a cognitive component and can be viewed in Piagetian terms as the development of schema through processes of assimilation and accommodation. Research indicates that the responsiveness of an infant's environment is positively correlated with measures of cognitive performance. An individual's belief that he can affect his environment may begin in infancy. Parents, other adults, siblings and even the inanimate environment may affect the development of locus of control as they respond to the infant's needs, demands, and behaviors by providing response contingent stimulation. Research also indicates that children's psychological and cognitive development is negatively correlated with social environments which provide excessive amounts of noncontingent stimulation. Among the recommendations offered, adults should provide contingent stimulation rather than overstimulation. They should adopt an authoritative style of interaction which challenges children after compliance and involved fewer terminating commands, and they should avoid authoritarian and permissive styles of interaction.
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Development of locus of control: A review and model for further exploration

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The importance of locus of control has been extensively established by years of research (see books by Lefcourt, 1976 and Phares, 1976). Although most of the research has focused on adults rather than children, there is a deepening interest in the onset and antecedent factors affecting the development and socialization of locus of control in children which needs further exploration. The purpose of the present paper is to provide a developmental perspective to locus of control which views contingency awareness established during infancy and early childhood as the building block-foundation for the development of locus of control expectancies.

According to Rotter, (1966) "when a reinforcement is perceived by the subject as following some action of his own but not being entirely contingent upon his action, then in our culture, it is typically perceived as the result of luck, chance, fate, as under the control of powerful others or as unpredictable because of the great complexity of the forces surrounding him. When the event is interpreted in this way by an individual, we have labeled this a belief in external control. If the person preceives that the event is contingent upon his own behavior on his relatively permanent characteristics we have termed this a belief in internal control" (p. 1.). When considering the theme for this year's conference, that is, infancy and early childhood education, one might question why include locus of control? In the Annual review of psychology, Carlson (1975) suggested that locus of control is the most popular topic in current personality research. However, locus of control is a personality dimension with cognitive components which have received too little attention.

Rotter's social learning theory incorporates both cognition and behavior, as well as, expectancy and reinforcement. According to Rotter (1966), expectancies in each situation are determined not only by experiences in that situation, but also by experiences in other situations which the individual perceives as similar. These expectancies of reinforcement clearly involve a cognitive component and can be viewed in Piagetian terms as the development of schema (e.g, success or failure; or contingent reinforcement) through the processes of assimilation and accommodation. This conceptualization is further developed later in the present paper.

Studies with children have found that internals were more socially popular with peers (Nowicki & Roundtree, 1971); internals persist longer on difficult and time consuming tasks (Waters, 1972); and internal beliefs are related to school grades and predictive of school achievement (Nowicki & Strickland, 1973). In a replication of the classic black vs. white doll studies, Nowicki and Tanner (1974) found that black children who did choose the black doll were significantly more internal than those choosing the white doll. The importance of control over environmental events was recently demonstrated with 12-month-old infants as a frightening cymbal, clapping toy monkey became a pleasant toy when the infants had control over its actions (Gunnar-Vongnechten, 1978). Seligman (1976) and others have argued that depression, feelings of powerlessness, and helplessness are major problems facing the mental health of individuals in our society. It has also been concluded that locus of control expectancies are the most important of all determinants of under achievement in school among disadvantaged minority children

(Coleman, 1966). Therefore, individuals in the mental health, social service, education, and related fields as well as parents need to be concerned with and aware of the development of locus of control in infants and children.

A number of different yet highly related constructs have been used by different individuals to describe quite similar phenomena (behavior) in infancy and early childhood. White (1959) has described competence in infants as the organism's capacity to interact effectively with its environment, while Harter (1978) has expanded White's position in a recent model of effectance motivation as an important motive which is the basis for future learning, and Watson's (1966) contingency awareness refers to an organism's functional knowledge that the nature of the stimuli received is sometimes affected by the nature of the behavior the organism is emitting. Seligman (1976) has demonstrated the learned helplessness phenomenon, while Piaget (1952) has described behaviors during infancy in terms of primary and secondary circular reactions which facilitate the development of understanding means-ends relations. All of the above constructs have some similarity to Rotter's locus of control construct. It is suggested that the onset and early development of contingency awareness is seen as the precursor for the development of locus of control expectancies.

Child Measures. For several years the most frequently used measure of I-E in children (8-14 years) has been the Intellectual Achievement Responsibility Questionnaire (IAR) which was developed by Crandall, Katkovsky, and Crandall. It measures locus of control in intellectual achievement situations involving both positive and negative events.

Other measures have recently been developed (see Lefcourt, 1976 for further description of measures: the Nowicki-Strickland scale for children (grades 3-12) as well as a preschool measure; Stephens-Delys preschool measure; and the Stanford Preschool Internal-External Scale (SPIES). Recently, Connell and Harter (1978) have developed a multidimensional measure of children's perceptions of control. The scale was constructed to assess children's understanding of the reasons for their successes and failures in everyday situations. Instead of simply measuring either internal or external control, Connell and Harter (1978) have included three possible sources of control: internal source of control; powerful others source of control, and unknown source of control. In addition three reinforcement or competency areas (Harter, 1977) have been included in the scale: 1) cognitive - it Hems pertaining to school activities; 2) social-social/peer interactions; 3) physical-activities such as athletics. There is also an independent assessment of children's general perceptions of control. Since evidence has been presented that the I-E scale (Rotter, 1966) is not unidimensional, but rather multi-dimensional, it is clear that future research needs to consider the multi-dimensional nature of this construct and stop classifying individuals as simply internal or external as if these were permanent traits. However, much additional research is needed to establish the reliability and validity of children's measures of locus of control.

Parental Antecedents. What is there in the parent-child relationship that may account for the development of an internal or external locus of control orientation? Research on the antecedents of locus of control

has been a neglected area. There has been limited research with studies primarily being correlational and relying on retrospective data from both subjects and their parents. Lefcourt (1976), Phares, (1976), and Strickland (1977) have provided reviews of this literature. Rotter (1966) suggested that consistent and nurturant child-rearing practices should be related to the development of locus of control in children. Based on retrospective studies with college students (see Strickland, 1977) internals tend to report positive, consistent upbringing with approval for independence striving and very little hostile, controlling or over protective treatment by parents.

In an early study of locus of control in children based on observations of parent-child interactions, Katkovsky, Crandall & Good (1977) found that internal children had parent's who were "babying", generally protective, affectionate, and more approving. Although it appears that parents who are protective, nurturant, approving and non-rejecting had children that became more internal, Crandall (1973) reported longitudinal data from the Fels research program for mother-child interactions throughout childhood which suggested almost the reverse of previous findings. Crandall found that mothers of internals (especially females) were lacking in affection, somewhat rejecting and punitive, and critical toward their children. She found that the mothers had pushed their offspring toward early independence. It is very possible that because of the helpless nature of infants and young children early warmth and protectiveness, a part of early contingent stimulation, is important for development of internality. However, as children get older, parents need to change their overall styles of responding to children in order to encourage greater independence. Wichern and Nowicki (1976) found that

mothers of internals reported earlier ages for training and allowing independence than mothers of externals. Levenson (1973) reported data consistent with Crandall's findings, at least for girls. Males who were reportedly helped and taught by their mothers had higher internal scores. However, girls who perceived their mothers as not worrying about them had higher internal scores than girls who perceived their mothers as protective. These results can be explained as resulting from sex differences in achievement expectations for boys and girls.

Considering the variety of I-E measures used as well as the methodological approaches used to investigate parental-antecedents of locus of control, there is an impressive degree of consistency in the research findings. Where studies have differed in their findings future research needs to investigate more closely the contingent relationship between children's actions and parental behaviors. Baumrind, (1971) reported that children who showed most mature and adaptive cluster of coping behaviors in nursery school had parents who praised their children clearly contingent on specifiable actions of the child. In addition more longitudinal data needs to be collected in order to determine any developmental changes in locus of control.

Teaching Styles and Locus of Control. There are a few recent studies relating maternal teaching styles and the development of competence and locus of control in children which provide information on specific adult-child interactions which affect the development of locus of control. White (1972) found that mothers of competent infants stop briefly, attend to, and encourage their child's on going behavior. The important feature of this teaching style was that the adult shares

interest in what the child is doing and is sensitive as well as responsive to the child's needs. Most of the interactions also occurred at the child's request which provided an opportunity for establishing a relationship between the child's behavior and the adult's response.

In a recent study by Croft, Barocas, Sameroff, and Jones (1977) the relationship between maternal teaching style and locus of control in four year-olds was investigated. Mothers were instructed to teach their children how to fold a simple paper boat for which she was provided a visual model. The mother's teaching style as well as the child's responsiveness to parental cues and reinforcement were videotaped. Children who were more internal in their orientation had mothers who: 1) made greater use of initiating cues; 2) used more gestures to reference the model; and 3) used interactional strategies which challenged children after compliance. The children who were more external, had mothers who: 1) used more terminating commands; 2) intruded into the teaching process more frequently; and 3) provided greater structure after incorrect response (e.g. making the folds herself). The researchers suggested that the initiating commands may function to tell a child how to avoid failure, while the use of terminating commands simply tells a child what not to do, rather than what he can do.

Dweck and Reppucci (1973) found that Seligman's "learned helplessness" phenomenon could be engendered among children. Children who experienced continuous unavoidable failures on problems administered by a "failure experimenter", later failed to solve previously solvable problems administered by a "success experimenter." External children (on the IAR) showed the greatest decrement in performance. Dweck followed

this research with a study involving a small sample of children who school personnel judged to be "helpless", in the sense of being passive before challenges which they were capable of solving. These children differed from "non-helpless" children on both measures of failure avoidance and locus of control. She then used two training procedures to alter the failure-avoidance behavior of the "helpless" children. Some children were taught to assume responsibility for their failures with attributions made to effort rather than ability. Other children were provided with an enriched diet of success experiences. Dweck found that the children who experienced the success diet performed poorly on the problems following failure, while children who received reattribution training improved in their performance following failures. The children continued to verbalize the fact that insufficient effort rather than ability was responsible for the failures. Based on these results it is apparent that training children to perceive internal variables (e.g. lack of effort) as being responsible for failures is a more successful approach in helping children who seem "helpless." The lack of effort may create a challenge for changes, while failures due to inability may be perceived as an unattainable task. Future studies involving adult teaching styles and their effects on children's development of locus of control need to focus on the contigent relationship between what the child does and how the adults respond.

Contingent Stimulation: Responsive Environments. Constructs such as competence, effectance motivation, helplessness, generalized expectancy, contingency awareness, primary and secondary circular reactions, and locus of control are all quite similar in that the infant is competent

to the extent that he can control the effect that his environment will have on him through his own activity. It appears quite probable that an individual's belief that he can effect his environment (i.e. locus of control) may begin in infancy. As primary caretakers, parents are likely to be the most important influence in providing a responsive environment as they respond to the infant's needs, demands, and behaviors (e.g. cries). However, other adults, siblings and even the inanimate environment (e.g. toys) may also affect the development of locus of control through response contingent stimulation. Goldberg (1978) recently provided an interesting model for the development of effectance motivation which directs attention to both characteristics of the infant as well as the parent in parent-infant interactions. This type of approach to the early environmental experiences of infants may lead to a better understanding of the development of locus of control orientation.

There is a growing body of literature which suggests that the responsiveness of an infant's environment is positively correlated with measures of cognitive performance. Lewis and Goldberg (1969) reported that the amount of contingent stimulation that mothers provided to their infants was positively related to cognitive development as measured by response decrement. Rubenstein (1967) studied maternal attentiveness and subsequent exploratory behavior in 5 month old infants and found that higher maternal attentiveness was related to greater exploratory behavior in the infant. Ainsworth and Bell (1974) found that maternal responsiveness to infant crying was associated with developmentally more advanced infants. Yarrow, Rubenstein, and Pedersen (1971) studied

dimensions of early stimulation and found that both maternal responsiveness and responsiveness of inanimate toys to be correlated positively with infants' performance on a mental development index, especially goal directed behaviors (e.g. goal orientation, reaching and grasping, secondary circular reaction). These studies provide evidence for the importance of responsive early environments and suggest directions for future research on the development of locus of control in infants.

Recent studies (Finkelstein & Ramey, 1977; Ramey, Heiger, & Klisz, 1972; Ramey, Starr, Pallas, Whitten, & Reed, 1975) have demonstrated the importance of contingent stimulation on learning in infants. Increasing the amount of response contingent stimulation for developmentally delayed infants was associated with advanced developmental performances on standardized tests of infant development and a free operant learning task. Infants who received increased amounts of response contingent stimulation in free operant tasks showed enhanced learning in later operant tasks. Therefore, response contingent stimulation is important for later learning in very young infants.

Socio-economic and Ethnic Group Differences. Socio1-economic and racial differences indicate that Blacks and individuals from lower socio-economic groups tend to be more external rather than internal in their locus of control orientation (Battle & Rotter, 1963; Gruen & Ottinger, 1969; Strickland, 1977). It has been assumed that children known as "disadvantaged", that is, slum reared infants and infants living in isolated rural communities, are being reared in supposedly unstimulating environments. However, few studies have systematically investigated exactly what about these early environments is non-stimulating. A few

of the studies which have investigated specific home environments and parent-child interaction of disadvantaged children (Gray & Klaus, 1968; Hertzig, Birch, Thomas & Mendez, 1968; Hess & Shipman, 1968; Schoggens & Schoggens, 1971; Wachs, Uzgiris, & Hunt, 1971), suggest that differences between groups may be due to differences in reinforcement contingencies and children's success experiences.

Schoggens and Schoggens (1971) observed 3-year-old children in families from urban and rural low income and urban middle income groups in ordinary activities of everyday life in their homes. Their data suggested that the reinforcement of culturally deprived children is less focused in terms of being directed toward the adequacy or inadequacy of his specific acts (i.e. non-contingent). These children do not seem to be receiving feedback from parents or the environment as to the effect of their behaviors. The amount of stimulation provided was not different between the groups, however the contingency relationship between the child's behavior and the stimulation was different. Further evidence related to this finding was provided by Wachs, Uzgiris, & Hunt, (1971) in a cross-sectional study of cognitive development in infants at five different age levels (7,11,15,18, and 22 months) living in a "deprived" environment. A striking finding of the study was that high intensity stimulation from which the infant could not escape and involving exposure to an excessive variety of circumstances were negatively correlated with several aspects of psychological and cognitive development. These results suggest that the hampering effects of "deprived" environments might lie in stimulus bombardment rather than stimulus deprivation. In this environment the infant, with little control, is exposed to excessive

amounts of non-contingent stimulation. This is consistent with other research by Watson (1971) which indicated impaired learning following non-contingent reinforcement experiences. These studies provide further support for the importance of contingent reinforcement in infancy and early childhood and potentially the development of locus of control expectancies.

Practical Applications. Based on the findings, reported in the present paper a number of suggestions can be offered to individuals concerned with the development of locus of control in infants and children. It is apparent that adults need to provide: a responsive environment, by responding to child's needs; responsive rather than non-responsive toys; and a protective environment early in life, followed by a period of independence training. Children should be encouraged to do things at their level of capability for success with emphasis for failures placed on effort (or lack of) rather than ability. Adults should provide contingent stimulation rather than over stimulation and consistent discipline which adopts the authoritative rather than authoritarian or permissive styles. Although Stollak's (1977) recent work focuses on a much broader goal, that is, the actualization of children's human potential, many of the suggestions he offers for this goal can be applied to the development of locus of control. It is reasonable to expect that the suggestions offered above will help foster contingency awareness in infants and young children which should affect the development of locus of control expectancies. Much future research is needed to test these ideas. The relationship between primary and secondary circular reactions and locus of control needs to be further explored.

In addition, Piaget's work on immanent justice and obedience to authority in children needs to be explored further since it is reasonable to expect a relationship between these beliefs and the belief in powerful others (i.e. external locus of control). It is hoped that the developmental perspective provided in the present paper will affect adults who interact with infants and young children and hopefully stimulate future research on the development of locus of control orientation.

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